a metal-organic complex used to manufacture high-temperature fuel cell components to be applied, interfaced, and caked is prepared having the formula:

$[CH_3-(CH_2)_n--C(CH_3)_2-CO_2]Me^{+m}$; where

A1 n is from 1 to 7,

m is a metal valence, and

Me is a material selected from the group consisting of Mg, Ca, Sr, Ba, Al, Sc, Y, In, La and lanthanides, Ti, Zr, Hf, Cr, Mn, Fe, Co, Ni, Cu, and the oxides of said metals for forming the cathode, the anode, the current passage, the electrolyte, the interface and electrical insulating layers.

12. (AMENDED) A method for manufacturing a solid oxide electrolyte of the high-

A2 temperature fuel cell, comprising:

preparing an initial metal-organic compound, wherein the metal-organic compound for manufacturing the solid oxide electrolyte is synthesized using the reaction:

$Me^{+A}(O_2C-C(CH_3)_2-(CH_2)_n-CH_3)_A+Me^{+A}(OC_mH_{2m+1})_A\Rightarrow$

$\Rightarrow Me^{+A}(O_2C-C(CH_3)_2-(CH_2)_n-CH_3)_x(OC_mH_{2m+1})_{A-X}$;

heating a ceramic electrode up to a predetermined temperature;

applying the prepared metal-organic compound onto the surface of the electrode;

thermally treating the electrode with the formed electrolyte;

forming a mixture, wherein components of said mixture are selected from the group consisting of metal carboxylates and metal alcoholates, having the formula:

$Me^{+A}(O_2C-C(CH_3)_2-(CH_2)_n-CH_3)_X(OC_mH_{2m+1})_{A-X}$, where

Me is a metal included in the functional component of the high-temperature fuel cell;

A is the valence of the given element (metal);

X is a coefficient determined from the following inequality: $0<X<A$;

n is from 1 to 7; and

m is from 2 to 8.

A3 15. (AMENDED) The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein the step of synthesizing a zirconium alcoholate $Zr(OC_mH_{2m+1})_4$ is performed during the interaction of a zirconium mineral salt with an alcohol and a metallic calcium during boiling.

17. (AMENDED) A method for manufacturing a solid oxide electrolyte of the high-temperature fuel cell, comprising:

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preparing an initial metal-organic compound, wherein the metal-organic compound for manufacturing the solid oxide electrolyte is synthesized using the reaction:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_A + Me^{+A}(OC_mH_{2m+1})_A \Rightarrow$

$\Rightarrow Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_X(OC_mH_{2m+1})_{A\text{-}X}$;

heating a ceramic electrode up to a predetermined temperature;

applying the prepared metal-organic compound onto the surface of the electrode;

thermally treating the electrode with the formed electrolyte;

forming a mixture, wherein components of said mixture are selected from the group consisting of metal carboxylates and metal alcoholates, having the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_X(OC_mH_{2m+1})_{A\text{-}X}$, where

Me is a metal included in the functional component of the high-temperature fuel cell;

A is the valence of the given element (metal);

X is a coefficient determined from the following inequality: $0<X<A$;

n is from 1 to 7; and

m is from 2 to 8;

wherein the step of synthesizing a zirconium alcoholate Zr(OCmH2m+1)4 is performed during the interaction of a zirconium mineral salt with an alcohol and a metallic calcium during boiling and wherein the metal-organic compound comprising zirconium is modified by at least one element selected from the group consisting of Mg, Ca, Sc, Y, Ce and lanthanides, and wherein said metal-organic compound is applied onto the surface of a carrier cathode by a method selected from the group consisting of rolling, painting, and spraying a gas-liquid emulsion, while scanning the means applying the prepared composition along the cathode surface at a temperature of the heated cathode of 400 to 550°C, and wherein the step of applying the metal-organic compound onto the heated surface of the ceramic cathode is performed with the growth rate of film thickness of 10 to 25 μm per hour.

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20. (AMENDED) The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein in order to increase the rate of applying the electrolyte film, a

A5 powder of a modified zirconium dioxide is added to the metal-organic compound before applying said metal-organic compound to the surface of the electrode.

A6 22. (AMENDED) The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein the step of applying the metal-organic compound onto the heated surface of the ceramic electrode in performed in an inert medium.

23. (AMENDED) A method for manufacturing a solid oxide electrolyte of the high-temperature fuel cell, comprising:

preparing an initial metal-organic compound, wherein the metal-organic compound for manufacturing the solid oxide electrolyte is synthesized using the reaction:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_A + Me^{+A}(OC_mH_{2m+1})_A \Rightarrow$

$\Rightarrow Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_x(OC_mH_{2m+1})_{A\text{-}X}$;

heating a ceramic electrode up to a predetermined temperature;

applying the prepared metal-organic compound onto the surface of the electrode;

thermally treating the electrode with the formed electrolyte;

forming a mixture, wherein components of said mixture are selected from the group consisting of metal carboxylates and metal alcoholates, having the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_X(OC_mH_{2m+1})_{A\text{-}X}$, where

Me is a metal included in the functional component of the high-temperature fuel cell;

A is the valence of the given element (metal);

X is a coefficient determined from the following inequality: $0<X<A$;

n is from 1 to 7; and

m is from 2 to 8; and

wherein in order to obtain a proton electrolyte, preparing a mixture carboxylates, said mixture comprising at least one material of the chemical formula selected from the group consisting of $SrCe_{0.85}Gd_{0.15}[O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3]_6$ and $BaCe_{0.85}Gd_{0.15}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_6$, where n is 2 to 3, and said mixture is applied onto the electrode surface heated up to the temperature not higher than 470°, wherein forming a film of the proton electrolyte of the chemical formula selected from the group consisting of $SrCeO_{0.85}Gd_{0.15}O_3$ and $BaCeO_{0.85}Gd_{0.15}O_3$.

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28. (AMENDED) The method according to Claim 25, wherein the mixture of liquid carboxylates comprises Cr, La, Sr, Mg, or Ca and wherein the concentration of Cr, La, Sr, Mg, Ca in the mixture of liquid carboxylates is from 20 to 110 g per kg.

29. (AMENDED) The method according to Claim 25, wherein the step of applying the current passage is performed by painting at the atmospheric pressure in an air medium.

30. (AMENDED) The method according to Claim 25, wherein the step of applying the current passage is performed by spraying a prepared mixture of carboxylates in an inert medium.

31. (AMENDED) A method for manufacturing a current passage of a high-temperature fuel cell, comprising:

synthesizing a powder of an electron-conductive material comprising doped lanthanum chromite;

producing an ultra-disperse mixture from the synthesized powder in organic carriers; and

applying the powder on the carrier cathode with thermal treatment, wherein the thin dispersion is produced by grinding the synthesized powder of the electron-conductive material of the doped lanthanum chromite until the ultra-disperse condition in the liquid medium of the mixture of metal-organic complexes of chrome, lanthanum and doping elements, and wherein the current passage film is manufactured by multiple steps of applying the thin dispersion onto the surface of the carrier cathode heated up to the temperature of forming, from the mixture of metal-organic complexes of chrome, lanthanum and doping elements, a gas-dense film of the doped lanthanum chromite of the composition similar to the thin-disperse powder synthesized individually, wherein the rate of thickness growth of the gas-dense film of the current passage on the surface of the carrier porous cathode is no less than 60 μm per hour.

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36. (AMENDED) A method for manufacturing an interface layer, comprising:

synthesizing a metal-organic complex;

applying the metal-organic complex onto a heated substrate, said metal-organic complex comprising the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A-X}(OC_mH_{2m+1})_x$, where:

Me is a metal selected from the group consisting of Cr, Mn, Co, Ni, Cu, Y, Zr, La and lanthanides, Mg, Ca, Sr, and Ba;

A is the valence of the given chemical element (metal);

X is a coefficient determined from the following inequality: 0<X<A:

n is from 1 to 7; and

A9 m is from 2 to 8,

wherein the step of applying the metal-organic complex onto a heated substrate, the substrate is heated up to a temperature not higher than 530°C in the air atmosphere, thereby forming a gas-dense film of the interface layer of no greater than 0.6 μm in thickness on the surface of the doped lanthanum chromite activating the electrode reaction.

A9 39. (AMENDED) A method for manufacturing an interface layer, comprising:

synthesizing a metal-organic complex;

applying the metal-organic complex onto a heated substrate, said metal-organic complex comprising the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A-X}(OC_mH_{2m+1})_x$, where:

Me is a metal selected from the group consisting of Cr, Mn, Co, Ni, Cu, Y, Zr, La and lanthanides, Mg, Ca, Sr, and Ba;

A is the valence of the given chemical element (metal);

X is a coefficient determined from the following inequality: 0<X<A:

n is from 1 to 7; and

m is from 2 to 8,

wherein in order to manufacture the gas-dense film of anti-diffusive interface layer, a mixture of compounds is used comprising the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A-X}(OC_mH_{2m+1})_x$, where:

X is equal to 0;

Me is a metal selected from the group consisting of Ce and doping elements Sm, Gd; and

n is from 1 to 2; and

wherein the mixture is applied onto a substrate heated up to a temperature not higher than 380°C in an atmosphere of an inert gas forming a gas-dense anti-diffusive film of the interface layer of not greater than 10 μm in thickness on the surface of a doped cerium oxide.

A10 42. (AMENDED) A method for manufacturing an interface layer, comprising:

synthesizing a metal-organic complex;